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METHOD FOR CHECKING CONTINUITY OF ANODIZED COATINGS

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Indian Standard

METHOD FOR CHECKING CONTINUITY OF ANODIZED COATINGS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 25 February 1977, after the draft finalized by the Metallic Finishes Sectional Committee had been approved by the Structural and Metals Division Council.

0.2 Anodized coatings on aluminium and its alloys are increasingly being used in the industry. In order that the coating may be uniform throughout, it is necessary that the coating should be continuous. This standard provides rapid check to be made of the continuity of thin coatings of aluminium oxide on aluminium and its alloys.

1. SCOPE

1.1 This standard prescribes a copper sulphate test for checking continuity of thin anodic coating on aluminium and its alloys (less than 5 micrometres thickness).

2. PRINCIPLE

2.1 The check is carried out on portions of about 100 mm^2 in area, chosen anywhere on the test piece except the points of feed-in of the current. If there are any points in the area where the metal is either bare or poorly coated, a chemical displacement of copper takes place on the aluminium accompanied by release of gas. The drop may be examined with the naked eye, immediately upon its application; the release of gas is almost instantaneous from points where the metal is bare. After the test, black points are noticed where the coating is not continuous.

3. REAGENT

3.1 Use a reagent of the following composition:

a) Crystallized copper sulphate ($CuSO_4.5H_2O$)	20 g
b) Concentrated hydrochloric acid (r.d. 1·16)	20 ml
c) Distilled water	1 000 ml

4. PROCEDURE

4.1 Remove all grease from the test pieces, by vapour degreasing. Mark out an area of about 100 mm^2 on a horizontal part using a wax crayon. Alternatively, use a rapidly drying lacquer to delineate the test area, leaving the test area itself unlacquered. Cover the area thus defined with four drops of the reagent. Leave the solution in contact with the surface for 5 minutes. The room temperature should be 20 ± 5°C.

5. EXPRESSION OF RESULTS

5.1 After 5 minutes of contact, rinse, examine the surface. Unless otherwise agreed, if the number of black spots do not exceed 5 per square centimetre, when examined by naked eye, the coating shall be considered as continuous.

INDIAN STANDARDS
ON
METALLIC FINISHES

IS:

Electroplating

1067-1968	Electroplated coatings of silver for decorative and protective purposes (*first revision*)
1068-1968	Electroplated coatings of nickel and chromium on iron and steel (*first revision*)
1337-1968	Hard chromium electroplated coatings on iron and steel (*first revision*)
1359-1966	Electroplated coatings of tin (*revised*)
1378-1967	Oxidized-copper finishes (*first revision*)
1572-1968	Electroplated coatings of cadmium on iron and steel (*first revision*)
1573-1970	Electroplated coatings of zinc on iron and steel (*first revision*)
1771-1970	Electroplated coatings of silver for general engineering purposes (*first revision*)
1772-1972	Electroplated coatings of copper (*first revision*)
1773-1961	Brass plating
1992-1962	Lead plating
2450-1963	Recommended practice for plating on aluminium and its alloys
3266-1965	Electroplated coatings of gold for general engineering purposes
4252-1967	Electroplated coatings of gold for decorative purposes
4827-1968	Electroplated coatings of nickel and chromium on copper and copper alloys
4828-1968	Electroplated coatings of nickel and chromium on zinc and zinc alloys
4942-1969	Electroplated coatings of nickel and chromium on aluminium and aluminium alloys

Anodes

1958-1967	Fabricated nickel anodes for electroplating (*first revision*)
1959-1961	Silver anodes for electroplating
2384-1963	Tin anodes for electroplating
2601-1964	Brass anodes for electroplating
2602-1964	Cadmium anodes for electroplating
2603-1964	Copper anodes for electroplating
2604-1964	Lead anodes for electroplating
2605-1964	Zinc anodes for electroplating
2606-1964	Alloy lead anodes for electroplating

Code of Practice

1340-1959	Protective coatings of zinc base alloys
1985-1962	Pretreatment of steel, copper and copper base alloys, zinc and zinc base alloys for electroplating
1986-1962	Hard chromium plating on steel
3194-1965	Recommended practice for cleaning of metals prior to electroplating
3655-1966	Recommended practice for electroplating
3656-1968	Code of recommended practice for mechanical polishing of metals for electroplating
5925-1970	Recommended practice for silver plating for general engineering purposes

Methods of Tests

3203-1965	Methods of testing local thickness of electroplated coatings
5523-1969	Methods of testing anodic coating on aluminium
5528-1969	Methods of testing corrosion resistance of electroplated and anodized aluminium coatings by copper accelerated acetic acid salt spray (CASS) test
6012-1970	Measurement of coating thickness by eddy current

General

IS:	
1868-1968	Anodic coatings on aluminium (*first revision*)
2679-1964	Recommendations for equipment for electroplating
3554-1966	Glossary of terms relating to electroplating
5905-1970	Sprayed aluminium and zinc coatings on iron and steel
6009-1970	Method for evaluation of results of accelerated corrosion tests
6057-1970	Hard anodic coatings on aluminium
6586-1972	Recommended practice for metal spraying for protection of iron and steel
6651-1972	Anodized aluminium for automobile use
6910-1973	Method of testing corrosion resistance of electroplated and anodized aluminium coatings by acetic acid salt spray test
7088-1973	Recommended practice for anodizing aluminium and its alloys
8038-1976	Method of testing corrosion resistance of nickel-chromium plating by the corrodkote test